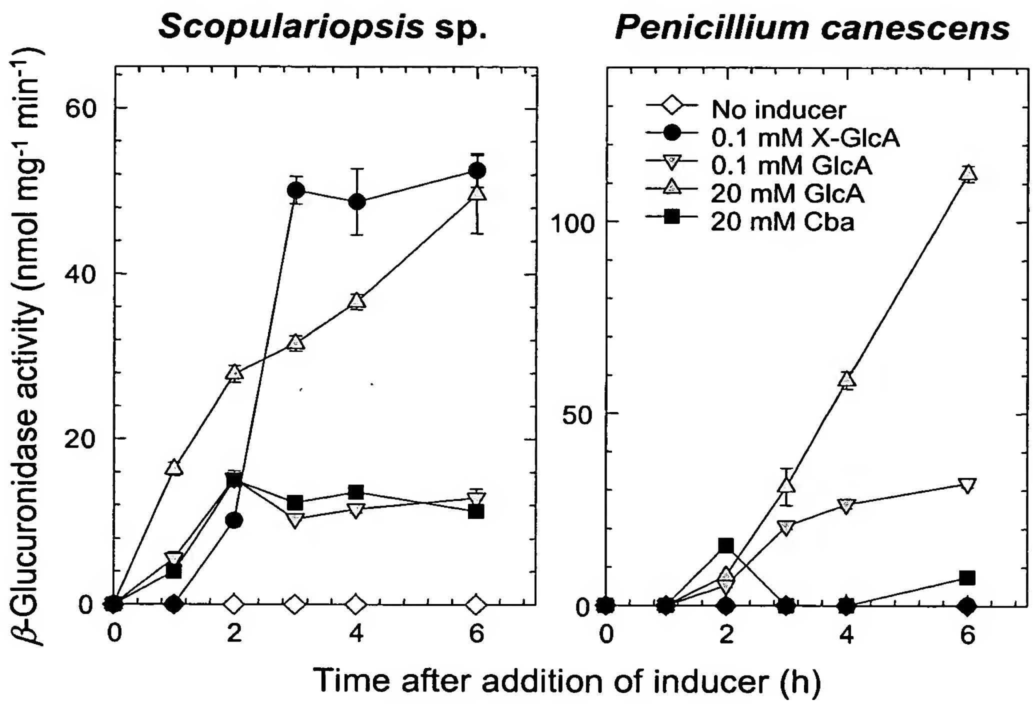
Figure 1



Scopulariopsis sp.
Penicillium canescens
β-Glucuronidase activity (nmol mg-1 min-1)
60
40
20
0
100
50
0
0
2
4
6
0
2
4
6
No inducer
0.1 mM X-GlcA
0.1 mM GlcA
20 mM GlcA
20 mM Cba
Time after addition of inducer (h)

Figure 2A

***Socpulariopsis* sp. isolate RP38.3**

```
                                                                   (dA)22
   1 GATATTGAGA GCACTTTTCT CTTGTATGTG GATGAGGAAG GGCGACGAAA TGAAAAAAAA AAAAAAAAAA
  71 AAAAGCCGGA GTTGACAAAC CCTGGCCTCG GCTTACCATA CACTAAAGTG ATAGATCTGG ATGTCACATT
 141 ATACGTGACG ATCTCCGGGG TCTATTCCGC TGTTCATTAC CATTCAGTCG GAAAAGTCTG GTGCACTGGC
               (dA)8
 211 CTTGCGAACA AAAAAAATGC TGTCGTGTGT TACCCGACTA CCATGCTTCT ACTCATTTTT CGGCGATTTC
 281 GGAATCCAGT ATGCGGGGAC GGACTGTAAG TTGTAAGAAA GTTCTGACAA ATACAGAAAA TCCGGGGAGT
 351 GGAAGTTCAA TTGAATGTGG AGAAGAAATG CGAGTGTCCA GATGGGGGAA TCTTGTAGAC TCTGCAAAGA
 421 GCAGAAGTGC GGAAAACACG GAGAAGAGGA GGGCGGAGAC TGCGGATAAG ACAAAGGGTA AGTGATCTTC
 491 GAGGTGTGTC TATTCGGGAA TAGTGTACAT CATAGGCGAC CTCATAGGGA AACCACCGAG TCAAACCCAT
       TATAbox                  (dA)10                        ------->
 561 GACTATATGA AGGAGCGACG ATCTCGAAAA AAAAAAGAGA AGAGCACAAC ACCTCCAGCC AGAGCAACCT
                                 M  R  L  S  N   I  P  L   L  R  P   W  A  A  L
 631 GAGCCGTCAA CTCCCTGCTT GTCCATCATG CGCCTCTCTA ATATCCCCCT TCTGCGCCCT TGGGCCGCTC
       S  L  A   T  L  I   G  L  S  S   G  A  D   T  D  Q   W  K  T  L   K  P  Q
 701 TGTCCCTAGC CACCCTCATC GGCCTGTCCT CTGGTGCCGA CACTGACCAA TGGAAGACGC TCAAGCCCCA
      A  N  A   I  R  E  L   L  S  L   D  G  T   W  N  F  A   L  P  Q   S  R  E
 771 AGCTAATGCT ATTCGGGAGC TACTCTCCCT TGATGGTACC TGGAACTTTG CCCTCCCGCA ATCACGCGAA
     I  E  E  D   Q  G  W   T  S  V   I  P  P  K   L  Q  I   P  V  P   A  S  Y  N
 841 ATTGAGGAAG ACCAGGGCTG GACTAGCGTT ATTCCACCCA AACTGCAAAT CCCAGTGCCC GCCAGCTACA
       D  I  F   T  D  P   A  I  R  N   N  V  G   W  A  Y   Y  Q  R  H   A  I  V
 911 ACGACATCTT CACCGATCCG GCGATCCGGA ACAACGTTGG CTGGGCATAC TATCAGCGCC ACGCCATTGT
      P  Q  T   W  S  E  G   R  Y  Y   V  R  F   D  S  V  T   H  E  A   K  V  Y
 981 CCCCCAGACC TGGTCTGAGG GACGCTACTA TGTTCGCTTC GACTCTGTTA CGCACGAGGC CAAGGTCTAC
     V  N  D  E   E  V  G   G  H  V   G  G  Y  T   P  F  E   V  D  L   T  D  L  V
1051 GTCAACGACG AGGAAGTCGG AGGCCATGTC GGTGGATATA CTCCCTTCGA GGTTGACCTG ACCGACCTTG
```

Figure 2B

```
      S  P  G   E  Q  F   R  L  T  V   A  V  N   N  I  L   T  W  Q  T   I  P  P
1121  TGTCGCCCGG AGAGCAGTTC CGCCTGACTG TTGCTGTCAA CAATATCCTG ACTTGGCAGA CCATCCCCCC
       G  E  V   V  T  N  E   A  G  K   L  R  Q   D  Y  N  H   D  F  Y   N  Y  A
1191  TGGTGAGGTC GTGACCAACG AGGCTGGTAA GCTTCGACAG GACTACAACC ACGACTTCTA CAACTACGCT
      G  I  A  R   S  V  S   L  Y  S   V  P  D  V   H  V  S   D  V  T   V  T  T  E
1261  GGAATTGCAC GTTCCGTCTC GCTATACTCC GTGCCTGATG TTCATGTTAG CGACGTCACT GTTACTACCG
       N  D  D   E  G  N   E  G  T  V   N  Y  S   V  E  T   S  G  S  N   D  T  Q
1331  AGAACGACGA CGAGGGCAAC GAGGGCACCG TCAACTACTC TGTCGAGACC AGCGGGTCTA ACGACACTCA
       A  R  V   T  L  I  D   E  D  G   N  E  V   A  E  A  S   E  L  E   G  S  L
1401  GGCTAGGGTC ACTTTGATTG ATGAGGACGG CAACGAGGTC GCCGAGGCAT CGGAGCTGGA GGGGAGCTTG
      N  V  S  P   V  N  L   W  Q  P   G  A  A  Y   L  Y  T   L  R  V   E  L  L  S
1471  AACGTGAGCC CCGTGAATCT CTGGCAGCCG GGCGCGGCGT ACCTCTACAC TCTTCGCGTT GAACTCCTTT
       D  D  T   V  V  D   T  Y  D  L   P  V  G   V  R  S   V  R  V  E   G  N  Q
1541  CGGACGATAC CGTCGTCGAC ACTTATGATT TACCGGTTGG TGTACGGTCC GTTAGGGTTG AAGGAAACCA
       F  L  I   N  G  K  P   F  Y  F   T  G  F   G  K  H  E   D  S  P   V  R  G
1611  GTTCCTCATC AACGGCAAGC CCTTCTACTT CACCGGCTTT GGCAAGCACG AGGACAGCCC CGTCCGCGGA
      K  G  Y  D   P  A  Y   M  I  H   D  F  E  L   M  K  W   M  G  A   N  S  F  R
1681  AAGGGCTACG ACCCGGCCTA CATGATCCAT GATTTTGAGC TCATGAAGTG GATGGGCGCC AACTCCTTCC
       T  S  H   Y  P  Y   A  E  E  V   M  E  Y   A  D  R   H  G  I  V   V  I  D
1751  GGACCTCCCA CTACCCCTAC GCCGAGGAGG TCATGGAGTA CGCCGACCGT CACGGCATCG TCGTCATCGA
       E  V  A   A  V  G  L   N  L  G   I  S  A   G  L  R  G   D  E  P   P  K  T
1821  CGAGGTCGCC GCCGTCGGTC TGAACCTGGG CATCAGCGCA GGCCTCAGGG GAGATGAGCC GCCCAAGACC
      F  T  E  D   K  V  N   N  E  T   Q  K  T  H   A  Q  A   L  R  E   L  I  H  R
1891  TTCACGGAGG ACAAGGTTAA CAACGAGACG CAAAAGACAC ACGCCCAGGC CCTCCGTGAG TTGATCCACC
       D  K  N   H  A  S   V  V  S  W   C  V  T   N  E  P   A  S  A  E   D  G  A
1961  GTGACAAGAA CCACGCCTCC GTTGTCAGCT GGTGCGTCAC CAACGAGCCC GCCTCCGCCG AGGACGGTGC
       R  E  Y   F  Q  P  L   V  E  L   T  R  E   L  D  P  T   R  P  V   T  F  T
2031  CCGCGAGTAC TTCCAGCCCC TGGTCGAGCT AACCCGCGAG CTGGACCCCA CCCGCCCCGT CACCTTCACC
      N  V  M  G   A  T  V   D  K  C   L  I  S  D   L  F  D   F  L  S   L  N  R  Y
2101  AACGTCATGG GCGCCACCGT CGACAAGTGC CTCATCTCCG ATCTTTTCGA CTTCCTTTCT CTCAACCGCT
```

Figure 2C

```
      Y  G  W   Y  V  Q   T  G  D  L   E  S  A   E  V  A   M  E  E  E   L  L  Q
2171 ACTACGGGTG GTACGTCCAA ACGGGCGACC TGGAGTCCGC CGAGGTCGCC ATGGAGGAGG AGCTCCTCCA
       W  V  D   E  Y  D  K   P  I  I   M  S  E   Y  G  A  D   T  L  A   G  L  H
2241 GTGGGTCGAC GAGTATGACA AGCCTATCAT CATGTCCGAG TACGGCGCCG ACACCCTGGC CGGTCTCCAC
     A  V  D  E   V  L  W   S  E  E   Y  Q  T  N   L  L  R   M  S  H   K  V  F  D
2311 GCGGTCGACG AGGTGCTCTG GTCCGAGGAG TACCAGACCA ACCTCCTGCG CATGTCGCAC AAGGTCTTTG
       S  I  D   S  I  V   G  E  H  V   W  N  F   A  D  F   Q  T  P  H   T  G  V
2381 ACAGCATTGA CTCCATTGTT GGCGAGCACG TGTGGAACTT TGCTGATTTC CAGACTCCTC ATACTGGTGT
       N  R  V   D  G  N  K   K  G  V   F  T  R   E  R  R  P   K  A  A   A  H  E
2451 CAACCGTGTT GATGGAAACA AGAAGGGTGT GTTTACGCGT GAGCGGAGGC CTAAGGCCGC GGCACATGAG
     L  K  R  R   W  L  D   E  G  F   P  K  L  G   N  G  T   S  G  A   *
2521 CTCAAGAGGC GGTGGCTGGA CGAGGGGTTC CCGAAGCTGG GGAACGGTAC TTCCGGTGCT TAAGTGGAGC
2591 ACGGGTATGA TAGGGTTTAA CTGCGAAGAT ACATAGGGCA GAGGTTTTAG TGACATACAC CTGTTGAGAT
2661 CTGGAATTTA CGCCGTATGA ATTGCTTGAT GACTTTATGC CAAGGACTTG TTGCGCATCT AATACTTTGT
2731 AGAAAGCTAG TCGCTGCCGT GATTGCGAAG GGGGCTTTAA GTCACCCAAC CTGGATCAAA GACATTATTC
2801 CACTATATCA CAACTTCATG AGTACGAGTG GGGATTGAAA GCAAACGGTC GCGGACTCTA CTCGGCAGCC
2871 GCGACTTCGG GCCAAGTTTG AGAAAAGGGC CATGTTTCGA GGTTATGATT CGGAAGTCTA TACATTAATA
2941 CAAGGTGCCC TGCTCTGTTA AACCCCCTCT CACTCGCTTT TTAAAGACGC ACAGGGCCAT TTTGTGCCCT
                            Poly(dA) signal   Poly(dA) site
3011 TAACTCTGAA GACGTTGTTA GAATAAAAGT GGTGGAGCCA GCTGCCTACG CCTAGTTGGC CAGTTCTCCA
3081 GTTCTCCACT TGCAAGCTAA TCCTGAGGAA AAGCTTGACG CGGTGAAACG CCGTTCCGTT CTGCGTGAGG
3151 TTTAGTATCC TAACTAAGCA CGTACGGTAA AATCTCGGCC GTGCCGTGCC ACCTTGTTTG GATCGTCACG
3221 AACTCGTAAA ATCCCGCACT TGATTTTACT TAAAACGAGA CCTTTTACAT TCTGGAGTTG ATACCCCGGC
3291 GTATCCGCCA ACGTCGTNCN NNNCTTTTGN CCCTCATACA GGGCCGTTAC AAGCC
```

Figure 3A

***Penicillium canescens* isolate RPK**

```
  1 GCCAAGCTCA TCAGTCACCG ATGAAAAACT ACTCAATTGC CGATGCATCG TCTGGGAAAC TATATAAATG
                                                    TATA box     TATA box
 71 CCTAAGTGCA GCCAGATATA ATACCCTCAT CAACTTATAC TAATTCATTA AATAAACAGT GGCTTTGTTA
      ------->                    M  K  F   L  T  G   L  S  L  L   S  L  A   G  P  S
141 ATTACCCTTT AATAAAGCGG CAATGAAATT CCTTACGGGA TTGTCGCTGC TGTCTCTTGC TGGTCCATCG
    L  G  T  P   A  A  R   H  F  P   R  N  E  M   T  Q  H   E  Q  P   L  I  K  V
211 TTGGGTACAC CTGCAGCTCG GCACTTTCCA CGCAATGAAA TGACCCAACA TGAACAGCCC TTGATCAAAG
     R  P  Q   R  T  S   S  R  E  L   V  N  L   D  G  L   W  K  F  A   L  A  S
281 TCAGGCCCCA ACGAACTTCA TCTCGAGAGC TTGTGAACCT TGATGGTCTA TGGAAATTCG CCCTCGCATC
     G  L  N   D  T  A  Q   P  W  T   A  P  L   P  K  G  L   E  C  P   V  P  A
351 TGGCCTCAAT GACACGGCCC AACCGTGGAC AGCGCCATTA CCCAAAGGTC TTGAATGTCC AGTCCCGGCC
    S  Y  N  D   I  F  I   S  R  E   I  H  D  H   V  G  W   V  Y  Y   Q  R  E  V
421 TCTTACAACG ACATCTTCAT CAGCCGGGAG ATTCACGACC ATGTGGGATG GGTTTACTAT CAGCGTGAGG
     I  V  P   K  G  W   S  Q  E  R   Y  L  V   R  A  E   S  A  T  H   H  G  R
491 TCATTGTCCC CAAAGGCTGG TCTCAGGAGC GATATCTCGT GCGAGCCGAA TCCGCTACGC ACCATGGTCG
     I  Y  V   N  N  R  L   V  A  E   H  V  G   X  Y  T  P   F  E  A   D  V  T
561 CATCTATGTC AACAACCGGC TTGTTGCCGA GCATGTGGGC NGCTATACAC CTTTTGAAGC GGACGTCACT
    E  L  V  A   P  G  E   K  F  R   L  T  I  G   V  N  N   E  L  T   H  E  T  I
631 GAATTAGTCG CCCCCGGAGA GAAATTTCGC TTGACGATTG GTGTCAACAA CGAGCTTACC CATGAGACTA
     P  P  G   K  I  T   T  G  N  A   T  G  K   R  I  Q   T  Y  Q  H   D  F  Y
701 TCCCACCTGG AAAAATCACG ACAGGGAACG CGACTGGCAA GAGAATCCAG ACCTATCAAC ATGACTTTTA
     N  Y  A   G  L  A  R   S  I  W   L  Y  S   V  P  Q  Q   H  I  Q   D  I  T
771 CAACTATGCT GGTCTCGCCC GATCTATCTG GCTTTATTCT GTACCCCAGC AACATATCCA GGATATTACT
    V  V  T  D   V  D  G   D  N  G   L  I  N  Y   E  V  E   V  A  N   Q  T  T  G
841 GTGGTTACAG ATGTTGATGG TGACAATGGT CTGATTAACT ACGAGGTCGA AGTGGCGAAC CAGACGACGG
```

Figure 3B

```
      Q  I  Q   I  S  V   I  D  E  D   G  A  I   V  A  K   A  S  G  A   Q  G  T
 911  GGCAGATCCA GATCTCAGTG ATCGACGAGG ATGGAGCTAT TGTTGCAAAG GCCTCGGGAG CTCAGGGTAC
      V  T  I   P  S  V  K   L  W  Q   P  G  A   A  Y  L  Y   Q  L  Q   V  N  I
 981  TGTCACAATT CCCTCAGTCA AGCTATGGCA ACCTGGCGCC GCATATCTCT ACCAACTCCA GGTCAACATC
      V  G  S  S   G  D  V   V  D  T   Y  N  L  A   T  G  V   R  T  V   K  V  A  G
1051  GTGGGTTCTA GCGGCGATGT AGTCGACACC TACAATTTGG CTACGGGCGT GCGTACTGTC AAGGTTGCCG
      S  Q  F   L  I  N   G  K  P  F   Y  F  T   G  F  G   K  H  E  D   T  A  V
1121  GGTCACAATT CTTAATAAAT GGAAAGCCTT TCTACTTTAC CGGTTTTGGC AAACATGAAG ACACAGCAGT
      R  G  K   G  H  D  P   A  Y  M   V  H  D   F  Q  L  M   K  W  I   G  A  N
1191  ACGTGGCAAA GGACATGACC CAGCATACAT GGTTCACGAT TTCCAACTCA TGAAATGGAT TGGAGCAAAT
      S  F  R  T   S  H  Y   P  Y  A   E  E  V  M   D  F  A   D  R  N   G  I  V  V
1261  TCTTTTCGGA CTTCACACTA TCCTTACGCG GAAGAGGTCA TGGATTTCGC AGATCGAAAT GGAATTGTCG
      I  D  E   T  P  A   V  G  L  N   I  A  L   M  G  V   S  E  S  G   A  P  Q
1331  TGATCGATGA AACACCTGCC GTTGGTCTGA ACATTGCCTT GATGGGCGTA TCTGAGAGTG GTGCCCCACA
      T  F  T   P  D  A  I   N  D  K   T  Q  E   A  H  K  Q   A  I  R   E  L  I
1401  AACATTTACG CCAGATGCGA TTAACGATAA AACCCAAGAG GCCCACAAGC AGGCGATTCG TGAGCTCATT
      A  R  D  K   N  H  A   S  V  V   M  W  S  I   A  N  E   P  A  S   H  E  D  G
1471  GCCCGAGACA AAAACCATGC CAGTGTTGTC ATGTGGTCTA TTGCCAACGA GCCCGCATCT CATGAAGATG
      A  R  E   Y  F  E   P  L  T  N   L  T  R   Q  L  D   P  T  R  P   I  T  F
1541  GAGCTCGCGA ATACTTCGAG CCACTGACCA ATTTGACTCG TCAACTTGAT CCAACTCGCC CTATTACATT
      A  N  V   G  T  A  T   Y  Q  L   D  R  I   S  D  L  F   D  V  S   C  I  N
1611  TGCTAACGTC GGCACGGCGA CATATCAGCT GGATCGGATC TCTGATCTGT TTGATGTCAG TTGCATAAAT
      R  Y  F  G   W  Y  S   Q  T  G   D  L  E  E   A  E  A   A  L  E   K  E  L  H
1681  CGGTATTTCG GATGGTATTC TCAAACAGGA GACCTTGAGG AAGCAGAGGC AGCTCTTGAA AAGGAGCTGC
      G  W  Q   E  K  F   H  R  P  I   V  M  T   E  Y  G   A  D  T  L   A  G  L
1751  ATGGATGGCA AGAGAAATTC CACAGGCCGA TCGTCATGAC CGAATATGGT GCAGATACCC TTGCAGGCCT
      H  S  I   L  G  L  P   W  S  E   E  F  Q   V  Q  M  L   D  M  Y   H  R  V
1821  TCACTCTATC CTCGGACTGC CTTGGAGCGA AGAGTTCCAA GTACAAATGC TAGACATGTA CCATCGAGTG
      F  D  R  I   E  S  M   A  G  E   H  V  W  N   F  A  D   F  Q  T   N  L  G  I
1891  TTTGATCGCA TTGAGTCGAT GGCAGGCGAG CATGTTTGGA ACTTCGCCGA TTTCCAGACC AACTTGGGTA
```

Figure 3C

```
      I  R  V   D  G  N   K  K  G  V   F  T  R   D  R  K   P  K  A  A   A  H  S
1961  TCATCCGAGT AGACGGTAAC AAGAAGGGTG TTTTCACCCG TGACCGAAAG CCAAAGGCGG CAGCTCATAG
       L  R  A   R  W  T  S   I  D  K   N  *
2031  TTTGAGGGCA AGGTGGACTA GTATTGATAA GAATTAAGGA ATTGACATAC TGCCAAATAC AAATGTTTGG
2101  CCTCACATTA CAAAACTATA TGCAATTAAA TGTACTGAAG ATTCGAGGGG TCGACCACTG ACAATGGAAC
2171  AAAATGTGCT TAACAGACGT AAGTCTGGAT TCTACTTGAA CAGACGTAAG TCTGGATTCT ACTTGATTGG
2241  ACTGCTTGTC ATATGTTCCA AATCGTATCG TAAACATTAT TGAAAATGGC CAGGAGACAG CGTGGAAAGA
2311  AAGGACAACA GTCTGGAAGA CAAGTTCGGA TGCGCGGATT CCTCGAAGCT CCCCTTGCAA AACTCATTAC
2381  TGGGCCCCTC CATACAACAT TAAGCGCTAT CATGATCTTC TCTACAAAGG GCCTCTGCCC AGGTGGACTG
                                                                  Poly(dA) signal
2451  CCTTCTCTGA GGATGTGGAG CGGGTCTACT TCCATCAAGT CCTCATCAAT AGAGCTATAT ACGATATTGG
                Poly(dA) site
2521  ACGAGCGGCA GAAGGCAACG AGACAATCAA CGAGTTCGTG GCTGTAGTCC AAGAGTCTGT CGGCGTTCAG
2591  AGCTGTTTCA TGCACTCAAT CGGAACGG
```

Figure 4A

Penicillium canescens **strain DSM1215**

MetLysPheLeuThrArgLeuSerLeuLeuSerLeuAlaAlaPro
ATGAAATTTCTTACGCGATTGTCGCTGCTATCTCTTGCTGCTCCA

SerLeuGlyThrProAlaAlaArgHisPheProArgAsnGluMet
TCGTTGGGTACACCTGCAGCTCGGCACTTTCCACGCAATGAAATG

XaaGlnAsnGleGlnProLeuIleLysIleArgProGlnArgThr
ATCCAAAATGAACAGCCCTTGATCAAAATCAGGCCCCAACGAACT

SerSerArgAspLeuValAsnLeuAspGlyLeuTrpLysPheAla
TCATCTCGAGACCTTGTGAACCTTGATGGTCTATGGAAATTCGCC

LeuAlaSerGlyProAsnAspThrAlaGlnProTrpThrAlaPro
CTCGCATCTGGCCCCAATGACACGGCCCAGCCGTGGACAGCGCCA

LeuProLysGlyLeuGluCysProValProAlaSerTyrAsnAsp
TTACCCAAAGGTCTTGAATGTCCAGTCCCGGCCTCTTACAATGAC

IlePheIleSerArgGluIleHisAspHisValGlyTrpValTyr
ATTTTCATCAGCCGGGAGATCCACGACCATGTGGGATGGGTTTAC

TyrGlnArgGluValIleValProLysGlyTrpSerGlnGluArg
TATCAGCGTGAGGTCATTGTCCCCAAAGGCTGGTCTCAGGAGCGA

TyrLeuValArgAlaGluSerAlaThrHisHisGlyArgIleTyr
TATCTTGTGCGAGCCGAATCCGCTACACACCATGGTCGCATCTAT

ValAsnAsnArgLeuValAlaGluHisValGlyGlyTyrThrPro
GTCAACAACCGGCTTGTTGCGGAGCATGTGGGCGGCTATACACCT

PheGluAlaAspIleThrAspLeuValValProGlyGluLysPhe
TTTGAAGCCGACATCACTGATTTGGTCGTCCCTGGAGAGAAATTT

ArgLeuThrIleGlyValAsnAsnGluLeuThrHisGluThrIle
CGTTTGACGATTGGTGTCAACAACGAGCTTACCCATGAGACTATC

ProProGlyGluIleThrThrAlaAsnAlaThrGlyLysArgIle
CCACCAGGAGAAATCACAACAGCGAACGCGACTGGCAAGAGAATC

GlnThrTyrGlnHisAspPheTyrAsnTyrAlaGlyLeuAlaArg
CAGACCTATCAACATGACTTTTACAACTATGCCGGTCTCGCCCGA

SerIleTrpLeuTyrSerValProGlnGlnHisIleGlnAspIle
TCTATCTGGCTTTATTCTGTACCCCAGCAACATATCCAGGATATT

Figure 4B

ThrValValThrAspValAspGlyAspAsnGlyLeuIleAsnTyr
ACTGTGGTTACAGATGTTGATGGTGACAATGGTCTGATCAACTAC

GluValGluValAlaAsnGlnThrThrGlyGlnIleGlnIleSer
GAGGTCGAAGTGGCGAACCAGACGACGGGGCAGATCCAGATCTCA

ValIleAspGluAspGlyAlaIleValAlaAsnAlaSerGlyAla
GTGATCGACGAGGATGGAGCTATTGTTGCAAATGCCTCGGGAGCT

GlnGlyThrValThrIleProSerValLysLeuTrpGlnProGly
CAGGGTACTGTCACAATTCCCTCAGTCAAGCTATGGCAACCTGGC

AlaAlaTyrLeuTyrGlnLeuGlnValAsnValValAspSerSer
GCCGCATATCTCTACCAACTCCAGGTCAACGTCGTGGATTCTAGC

GlyAspValValAspThrTyrAsnLeuAlaThrGlyValArgThr
GGCGATGTAGTCGACACCTATAATTTGGCTACGGGCGTGCGTACT

ValLysIleSerGlySerGlnPheLeuIleAsnGlyLysProPhe
GTCAAGATTTCCGGGTCACAATTCTTGATAAACGGCAAGCCTTTC

TyrPheThrGlyPheGlyArgHisGluAspThrAlaValArgGly
TACTTTACCGGTTTTGGCAGGCATGAAGACACAGCAGTACGTGGC

LysGlyHisAspProAlaTyrMetValHisAspPheGlnLeuMet
AAAGGACATGACCCAGCATATATGGTTCACGATTTCCAACTCATG

LysTrpIleGlyAlaAsnSerPheArgThrSerHisXaaProTyr
AAATGGATTGGAGCAAATTCTTTCCGGACTTCACACTACCCTTAT

AlaGluGluValMetAspPheAlaAspArgAsnGlyIleValVal
GCAGAAGAGGTCATGGATTTCGCAGATCGAAATGGAATTGTCGTG

IleAspGluThrProAlaValGlyLeuAsnIleAlaLeuMetGly
ATCGATGAAACTCCTGCCGTGGGTCTGAACATTGCCTTGATGGGT

ValSerGluSerGlyAlaProGlnThrPheThrProAspGlyIle
GTATCTGAGAGTGGTGCCCCACAAACATTTACGCCAGATGGGATT

AsnAspLysThrGlnGluAlaHisLysGlnAlaIleArgGluLeu
AACGATAAGACCCAAGAGGCCCACAAACAGGCGATTCGTGAGCTC

IleAlaArgAspLysAsnHisAlaSerValValMetTrpSerIle
ATTGCCCGAGACAAAAACCATGCCAGTGTTGTCATGTGGTCTATT

Figure 4C

AlaAsnGluProAlaSerGlnGluAspGlyAlaArgGluTyrPhe
GCCAATGAGCCTGCATCTCAGGAAGATGGGGCTCGCGAATACTTC

GluProLeuAlaAsnLeuThrArgGlnLeuAspProThrArgPro
GAGCCACTGGCCAATTTGACTCGTCAGCTTGATCCAACTCGCCCT

IleThrPheAlaAsnValGlyAlaAlaThrTyrGlnLeuAspArg
ATTACATTTGCTAATGTCGGCGCTGCAACATATCAGCTAGATCGG

IleSerAspLeuPheAspValSerCysIleAsnArgTyrPheGly
ATCTCTGATCTGTTTGATGTTAGTTGCATAAATCGGTATTTCGGA

TrpTyrSerGlnThrGlyAspLeuGluGluAlaGluAlaAlaLeu
TGGTATTCTCAGACAGGAGACCTTGAGGAAGCAGAGGCAGCTCTT

GluLysGluLeuArgGlyTrpGlnGluLysPheHisArgProIle
GAAAAGGAGTTGCGTGGGTGGCAAGAGAAATTCCACAGGCCGATC

IleMetSerGluTyrGlyAlaAspThrLeuAlaGlyLeuHisSer
ATTATGAGCGAATATGGTGCAGATACCCTTGCAGGTCTTCATTCT

IleLeuAlaLeuProTrpSerGluGluPheGlnValGlnMetLeu
ATCCTCGCACTGCCTTGGAGCGAAGAGTTCCAGGTACAAATGCTA

AspMetTyrHisArgValPheAspArgIleGluSerMetAlaGly
GACATGTACCATCGAGTGTTTGATCGCATTGAGTCGATGGCAGGC

GluHisValTrpAsnPheAlaAspPheGlnThrAsnLeuGlyVal
GAGCATGTTTGGAACTTCGCGGATTTCCAGACCAACTTGGGTGTC

IleArgValAspGlyAsnLysLysGlyValPheThrArgAspArg
ATCCGAGTAGATGGTAACAAGAAGGGTGTTTTCACGCGTGACCGA

LysProLysAlaAlaAlaHisSerLeuArgAlaArgTrpThrAsn
AAGCCAAAGGCGGCAGCTCATAGTTTGAGGGCAAGGTGGACGAAT

GlyAspLysAsn
GGTGATAAGAATTAG

Figure 5

Giberella zeae

ATGTTGCGACCACAAGCCAACAGGGCTCGCGACCTTGTGTCACTAGACGGTGTTTGGAACTTTG
CCCTCGCCAAATCTCACGACATTGAAACTGAGCAAGCATGGAAGAAGCGAATCTCACCAGAGCT
TCAAGTACCTGTTCCAGCCAGCTACAACGACATCTTTGCTGACGAGACCATCCGCGACCACGTC
GGCTGGGTCTACTATCAGCGTCAAGCAGTTGTTCCCCGCGGTTGGGTTGCGCCTCAGCGTGTCT
TTCTACGTGTAGATGCTGCAACCCACCACGGCAGAGTTTACGTCAACGACAAGTTTGTCGTCGA
GCATATCGGCGGCTATACACCGTTTGAGATTGAGCTTACTGGACTTGTCGAACCGGGGTCAGAG
TTTCGTCTTACGATTGCTGTGAACAATCAACTCACATGGGAGACTATTCCGCCGGGTCGCATTG
AGGCTCAAAGTGATGGTTCGCGGAAGCAGAGCTATCAGCATGACTTTTTCAACTATGCTGGATT
GGCCCGTTCTGTGTGGCTTTACTCGGTACCAAAGGTCTTTATAAATGATATCAGCGTCGGCACA
GATCTTCTTGGGGACGGAACCGGCATTGTCGAATTTGATATTCGGACCTCTGGTGAACTTCAGG
CTGACGCAAGATGGCGCATCCTGCTCGACGACGAAGAGGATGCGACAGTGTGTCAAGCCCAAGA
GTCACATGGAAAACTTGAGGTTAAAAACGCTAAATACTGGGCACCTGGTGCTGCGTACCTTTAT
CAGCTTCGGGCTCAGCTCGTACGCGGCGAACACGACGAGATCCTCGACACATATAACCTTGCCG
TAGGCATCCGTTCAGTCGAGATCCGAGATGGCCGCTTCTTCATCAACGGGAAGCCATTTTATTT
TACCGGCTTTGGCAAACACGAAGATGGCCCCGTCCGTGGACGCGGTTATGACGCGTCATACATG
ATACACGACTACCGTCTGATGAAGTGGATAGGAGCCAACTCTTTCCGAACCTCCCACTACCCCT
ACGCAGAGGAGGTTCTGGAATATGCCGACAGACACGGCGTGGTTGTTATTAACGAAACAGCCGC
CGTTGGTCTCAACCTCAATATTGTCTCGGGTATGTTTGGCAACAAGCAACTTGCCACATTCTCC
CCGGATACCATGAGTAGCAAAACACAGGCTTCACATGAACAAGCTATCCGTGAGCTTATCAGCC
GGGATAAGAACCACCCTTGTGTTGTGATGTGGATGCTGGCAAATGAGCCTGGGGCCAGCGAGCA
GGGAAGTCGAGAATACTTTGAACCGCTCGTTACCTTGGCGCGATCGCTGGACAGTCAGAAACGG
CCAATGTGCTACTCCCACATGATCCACTCTAAGCCTGATACAGATCGCATCGCAGACCTTTTTG
ATGTAGTCTGTATGAACCGCTACTACGGGTGGTACACGCAAACAGGAAACCTCAAAGCCGCAGA
AGTCGCCCTTGAAGCCGAGCTACGCAGTTGGCAAGAAGCCTACGCCGCCAAACCCATAATCATG
ACGGAATATGGCACCGACACAGTCGCAGGTCTGCACACCGTTTGTGATGTGCCCTGGACTGAAG
AGTACCAGGTTCGCTTTTTGGACATGTATCACCGCGTCTTTGACCGCATTGATAATGTCGTCGG
CGAGCATGTGTGGAACTTTGCTGATTTCCAGACATCGGCTATGATTATTAGGGTTGATGGGAAC
AAGAAGGGTATCTTTACTAGGGATCGCAGGCCAAAGAGTGCAGCTCATGCTTTGCGAGCGAGAT
GGACTGGGCCTGTTGGACCTCGCAAGATAGAGGTGACCAAGCAATAA

MLRPQANRARDLVSLDGVWNFALAKSHDIETEQAWKKRISPELQVPVPASYNDIFADETIRDHV
GWVYYQRQAVVPRGWVAPQRVFLRVDAATHHGRVYVNDKFVVEHIGGYTPFEIELTGLVEPGSE
FRLTIAVNNQLTWETIPPGRIEAQSDGSRKQSYQHDFFNYAGLARSVWLYSVPKVFINDISVGT
DLLGDGTGIVEFDIRTSGELQADARWRILLDDEEDATVCQAQESHGKLEVKNAKYWAPGAAYLY
QLRAQLVRGEHDEILDTYNLAVGIRSVEIRDGRFFINGKPFYFTGFGKHEDGPVRGRGYDASYM
IHDYRLMKWIGANSFRTSHYPYAEEVLEYADRHGVVVINETAAVGLNLNIVSGMFGNKQLATFS
PDTMSSKTQASHEQAIRELISRDKNHPCVVMWMLANEPGASEQGSREYFEPLVTLARSLDSQKR
PMCYSHMIHSKPDTDRIADLFDVVCMNRYYGWYTQTGNLKAAEVALEAELRSWQEAYAAKPIIM
TEYGTDTVAGLHTVCDVPWTEEYQVRFLDMYHRVFDRIDNVVGEHVWNFADFQTSAMIIRVDGN
KKGIFTRDRRPKSAAHALRARWTGPVGPRKIEVTKQ

Figure 6

Aspergillus nidulans

ATGAGGGTCTTCCCAGTGTTATCTTTCTTGTCACTCGCACTCATCCCTCCCTCGCTCGGCGTCC
CGTCGCCTCAGCTCCGCGACGTCGAGCTCCCGCCAACACAACAAGCCCTAACCATCAACCTGAA
ACCCCAGCAGACGTCGACGAGAGACCTCGTTTCTCTCGACGGGCTGTGGTCCTTTGCCCTCGAA
GACGCCACAAACAGCACCTCTGCTCCCTGGACGGCGGCGCTCCCAAAGGGCCTGGAATGTCCCG
TCCCTGCATCCTACAACGACATCTTCGTCGACAGGACCATTCACGATCACGTCGGCTGGGTATA
CTACCAACGCACTGTGACTGTCCCACGGGGCTGGGCAGATCAGCGCGCTTTCCTCCGTCTGGAG
TCAGCAACGCATCATGGCCGCGTCTATGTCAATGAGCACCTGGTTGCCGAGCATGTTGGCGGTT
ACACCCCGTTTGAAGCCGACATTACCTCTCTCGTGCAGCCTGGTGAAAGCTTCCGGTTGACAAT
CGGTGTGGACAACCAGCTGACGCACGAGACCATCCCTCCAGGTGATCTGGTGACTTCTGAGTAT
ACAGGGAAGAAACAGCAGAGCTACCAGCACGACTTTTACAATTACGCAGGGCTGGCGAGGTCCA
TATGGCTCTACTCTGTGCCCAAGGATCAGTTCATCAAGGACATCACGGTCGTTCCAGATGTTGA
TTGGGATGGTGACGCAGAGACCGGAGTGGTGAGCTATACCGTCCAGACTTCTAACGCGACGAGT
GGCCCCATCCGGATCTCAATTCTCGATGAAGAAGGAAACGAGGTCGCAACAGCGTCCGGAGCCA
CTGGGACAGCTACCATTCCCTCTGTCAACCTCTGGCAGCCTGGCGCTCCCTACCTATACTCCTT
CACTGTCAGCATCCTCTCCGCCTCCCAACGGCTGATCGACACATACACACTGCCCATCGGTATC
CGCACTGTGGCTGTCGGCAACGGCACTATCCTGGTCAACAATGAGCCGGTCTACCTGACCGGGT
TTGGCAAACACGAGGATAGTCCCATCCGCGGCAAAGGCCACGACATCGCGTACCTAGTCCACGA
CTTCCAGCTGCTGGACTGGATCGGCGCGAACTCTTTCCGCACCAGCCACTATCCTTACGCGGAA
GAGGTGATGGAATTTGCAGACCGCCAGGGAATTCTTGTCATTGACGAAACGCCCGCCGTCGGAC
TGGCGTACAGCATTGGCGCGGGCATCTCAACGGACACAAGCAGGGTGACCTTCGCGCCGGACGG
GATCAACAACAATACTCGCGCAGCCCACGCCCAGGCTCTCCGGGAACTCATTGCACGGGACAAG
AACCACCCCAGCGTTATCATGTGGTCGATCGCGAACGAACCCGCGTCTGATGAGCCAGGTGCGC
GCGCATACTTTGAGCCCCTCACGCGGCTCGCCCGCTCCCTCGATCCCGCGCACCGGCCCATAAC
TTTCGCCAACCTCGGCCTGGCAACCTATGAAACCGACACAATCTCTGACTTGTTCGATGTTCTC
TGCCTGAACCGATATTTCGGCTGGTACTCGTACACGGGAGACCTGGAGTCCGCCGGAAAGGCAC
TCCATGAGGAACTGGACGGATGGGTGGCCAAGTACCCGACCAAACCAATCATCATCAGCGAGTA
CGGGGCAGACACAATGGCGGGACTGCACTCTGTGCTGGGACTGATCTGGAGCGAGGAGTTCCAA
ATCGAGTTGCTGGATGTGTATCATGGGGTGTTCGACCAGTTCCAGAATGTGGTTGGTGAGCATG
TATGGAATTTCGCGGATTTCCAAACAAAGGAGGGCATACAGCGGGTGGATGGAACAAGAAGGG
TGTCTTTACCAGAGACCGCAGACCCAAGGGGGCGGCGTTTGCCTTGAGGAAGAGGTGGATGAAT
ATGATGTCGAGTTAG

MRVFPVLSFLSLALIPPSLGVPSPQLRDVELPPTQQALTINLKPQQTSTRDLVSLDGLWSFALE
DATNSTSAPWTAALPKGLECPVPASYNDIFVDRTIHDHVGWVYYQRTVTVPRGWADQRAFLRLE
SATHHGRVYVNEHLVAEHVGGYTPFEADITSLVQPGESFRLTIGVDNQLTHETIPPGDLVTSEY
TGKKQQSYQHDFYNYAGLARSIWLYSVPKDQFIKDITVVPDVDWDGDAETGVVSYTVQTSNATS
GPIRISILDEEGNEVATASGATGTATIPSVNLWQPGAPYLYSFTVSILSASQRLIDTYTLPIGI
RTVAVGNGTILVNNEPVYLTGFGKHEDSPIRGKGHDIAYLVHDFQLLDWIGANSFRTSHYPYAE
EVMEFADRQGILVIDETPAVGLAYSIGAGISTDTSRVTFAPDGINNNTRAAHAQALRELIARDK
NHPSVIMWSIANEPASDEPGARAYFEPLTRLARSLDPAHRPITFANLGLATYETDTISDLFDVL
CLNRYFGWYSYTGDLESAGKALHEELDGWVAKYPTKPIIISEYGADTMAGLHSVLGLIWSEEFQ
IELLDVYHGVFDQFQNVVGEHVWNFADFQTKEGIQRVDGNKKGVFTRDRRPKGAAFALRKRWMN
MMSS

Figure 7A

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                                                                    Pfam
Caenorhabditis elegans        (1) -------------------------MILKPTVLLLLLLQSISTITCLLH
Drosophila melanogaster       (1) MHLRIRLTCRKYEIWALSIFSLVTGLYVLHFSIALILVNKEVPQTRGMLY
Mus musculus                  (1) --------------------MSLKWSACWVALGQLLCSCALALKGGMLF
Rattus norvegicus             (1) --------------------MSPRRSVCWFVLGQLLCSCAVALQGGMLF
Felis catus                   (1) --------------------MLRGPAAVWAALGPLLWACGLALRGGMLY
Canis familiaris              (1) --------------------MSRGPAGAWVALGPLLWTCGLALEGGMLY
Cercopithecus aethiops        (1) -----------------------GLAMAWAVLGPLLWGCALALQGGMLY
Homo sapiens                  (1) --------------------MARGSAVAWAALGPLLWGCALGLQGGMLY
Sulfolobus solfataricus       (1) -------------------------------------------------
Thermotoga maritima           (1) ----------------------------------------------MVR
Lactobacillus gasseri         (1) -------------------------------------------MESALY
Escherichia coli              (1) ----------------------------------------------MLR
Staphylococcus sp.            (1) ----------------------------------------------MLY
Aspergillus nidulans          (1) -------MRVFPVLSFLSLALIPPSLGVPSPQLRDVELPPTQQALTINLK
Penicillium canescens         (1) -------MKFLTGLSLLSLAA--PSLGTPAARHFPRNEMTQHEQPLIKVR
Scopulariopsis sp.            (1) -------------MRLSNIPLLRPWAALSLATLIGLS-SGADTDQWKTLK
Gibberella zeae               (1) ----------------------------------------------MLR
Consensus                     (1)                                 L  L          MLY

                                  02837 →
Caenorhabditis elegans        (1) VQKNEIRTVDSLDGLWTFVREPHNGGDVGIVNQWNTLDLERFQNATVMPV
Drosophila melanogaster       (1) PRESETREVRSLDGIWNFVRSDQANPTQGVRDEWYAKELSKSRPTIPMPV
Mus musculus                  (1) PKESPSRELKALDGLWHFRADLSNNRLQGFEQQWYRQPLRESGPVLDMPV
Rattus norvegicus             (1) PKETPSRELKVLDGLWSFRADYSNNRLQGFEKQWYRQPLRESGPTLDMPV
Felis catus                   (1) PRESPSRERKELNGLWSFRADFSENRRQGFEQQWYRTPLRESGPTLDMPV
Canis familiaris              (1) PRESPSRERKDLDGLWSFRADFSDGRRQGFEQQWYRAPLRESGPTLDMPV
Cercopithecus aethiops        (1) PRESQSRERKELDGLWSFRADFSDNRRRGFEEQWYRRPLRESGPTLDMPV
Homo sapiens                  (1) PQESPSRECKELDGLWSFRADFSDNRRRGFEEQWYRRPLWESGPTVDMPV
Sulfolobus solfataricus       (1) -MRSFYRPKIDLQGFWKFKIDNEN---TGEENGWYKGLESED----IIYV
Thermotoga maritima           (1) PQRNKKRFILILNGVWNLEVTSK------------DR--P------IAV
Lactobacillus gasseri         (1) PIQNKYRFNTLMNGTWQFETDPN----SVGLDEGWNKELPDP---EEMPV
Escherichia coli              (1) PVETPTREIKKLDGLWAFSLDREN---CGIDQRWWESALQES---RAIAV
Staphylococcus sp.            (1) PINTETRGVFDLNGVWNFKLDYG----KGLEEKWYESKLTDT---ISMAV
Aspergillus nidulans          (1) PQQTSTRDLVSLDGLWSFALEDA----TNSTSAPWTAALPKG---LECPV
Penicillium canescens         (1) PQRTSSRELVNLDGLWKFALASG----LNDTAQPWTAPLPKG---LECPV
Scopulariopsis sp.            (1) PQANAIRELLSLDGTWNFALPQSR---EIEEDQGWTSVIPPK---LQIPV
Gibberella zeae               (1) PQANRARDLVSLDGVWNFALAKSH---DIETEQAWKKRISPE---LQVPV
Consensus                     (1) P   S SREL  LDGLW F  D S     G E QWY   L ES   LDMPV

Caenorhabditis elegans       (75) PSAYNDLGTGSELRDHIGWVWYEKKEFVPLRDRNMR---HVLRFGSVNYF
Drosophila melanogaster     (101) PASYNDITTDN-LRDHVGTVWYDRKFFVPRSWSKDQ--RIWLRFGSVHYE
Mus musculus                 (80) PSSFNDITQEAALRDFIGWVWYEREAILPRRWTQDTDMRVVLRINSAHYY
Rattus norvegicus            (80) PSSFNDITQEAELRNFIGWVWYEREAVLPQRWTQDTDRRVVLRINSAHYY
Felis catus                  (80) PSSFNDVGQDRQLRSFVGWVWYEREATLPQRWTQDLGTRVVLRIGSAHYY
Canis familiaris             (80) PSSFNDVGQDRQLRSFVGWVWYEREATLPRRWSQDPGTRVVLRIGSAHYY
Cercopithecus aethiops       (77) PSSFNDISQDWRLRHFVGWVWYEREVILPERWTQDLSTRVVLRIGSAHAY
Homo sapiens                 (80) PSSFNDISQDWRLRHFVGWVWYEREVILPERWTQDLRTRVVLRIGSAHSY
Sulfolobus solfataricus      (43) PASWNEQNPKWD--QFSGIAWYQKDLFVSNDNGNRK---AWMVFEGAGYI
Thermotoga maritima          (33) PGSWNEQYQDL--CYEEGPFTYKTTFYVPKELSQKH---IRLYFAAVNTD
Lactobacillus gasseri        (50) PGTFAELTTKRDRKYYTGDFWYQKDFFIPSFLKKKE---LYIRFGSVTHR
Escherichia coli             (48) PGSFNDQFADADIRNYAGNVWYQREVFIPKGWAG-QR--IVLRFDAVTHY
Staphylococcus sp.           (47) PSSYNDIGVTKEIRNHIGYVWYEREFTVPAYLKDQR---IVLRFGSATHK
Aspergillus nidulans         (87) PASYNDIFVDRTIHDHVGWVYYQRTVTVPRGWAD-QR--AFLRLESATHH
Penicillium canescens        (85) PASYNDIFISREIHDHVGWVYYQREVIVPKGWSQ-ER--YLVRAESATHH
Scopulariopsis sp.           (81) PASYNDIFTDPAIRNNVGWAYYQRHAIVPQTWSE-GR--YYVRFDSVTHE
Gibberella zeae              (48) PASYNDIFADETIRDHVGWVYYQRQAVVPRGWVAPQR--VFLRVDAATHH
Consensus                   (101) PSSFNDI   D  LR FVGWVWYERE  VP  WSQ     VVLR GSA HY
```

Figure 7B

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Caenorhabditis elegans      (75)  AVVYINSEKVTSHIGGHLPFEVDISAQIKFGAENK---FIVAVNNTLSWS
Drosophila melanogaster    (101)  AYVWINGQKVVKHEMGHLPFEAEVTDLLSYGAENR---ITVMCDNALIQT
Mus musculus                (80)  AVVWVNGIHVVEHEGGHLPFEADISKLVQSGPLTT-CRITIAINNTLTPH
Rattus norvegicus           (80)  AVVWVNGIHVVEHEGGHLPFEADITKLVQSGPLTT-FRVTIAINNTLTPY
Felis catus                 (80)  AIVWVNGVHVAEHEGGHLPFEADISKLVQSGPLAS-CRITIAINNTLTPH
Canis familiaris            (80)  AIVWVNGVHVAEHEGGHLPFEADISKLVQSGPLSS-CRITLAINNTLTPH
Cercopithecus aethiops      (77)  AIVWVNGVHTLEHEGGYLPFEADISNLVQVGPLSSHVRITIAINNTLTST
Homo sapiens                (80)  AIVWVNGVDTLEHEGGYLPFEADISNLVQVGPLPSRLRITIAINNTLTPT
Sulfolobus solfataricus     (43)  TKLWINGEYGGTHEGSFTQFKFPIKLKVNEFNKIV-----VKIDNTPSPY
Thermotoga maritima         (33)  CEVFLNGEKVGENHIEYLPFEVDVTGKVKSGENELR----VVVENRLKVG
Lactobacillus gasseri       (50)  AKVFINGHEVGQHEGGFLPFQVKISNYINYDQTNR---VIVLVNNELSEK
Escherichia coli            (48)  GKVWVNNQEVMEHQGGYTPFEADVTPYVIAGKSVR---ITVCVNNELNWQ
Staphylococcus sp.          (47)  AIVYVNGELVVEHKGGFLPFEAEINNSLRDGMNRV----IVAVDNILDDS
Aspergillus nidulans        (87)  GRVYVNEHLVAEHVGGYTPFEADITSLVQPGESFR---LTIGVDNQLTHE
Penicillium canescens       (85)  GRIYVNNRLVAEHVGGYTPFEADVTELVAPGEKFR---LTIGVNNELTHE
Scopulariopsis sp.          (81)  AKVYVNDEEVGGHVGGYTPFEVDLTDLVSPGEQFR---LTVAVNNILTWQ
Gibberella zeae             (48)  GRVYVNDKFVVEHIGGYTPFEIELTGLVEPGSEFR---LTIAVNNQLTWE
Consensus                  (101)  A VWVNG   V EHEGGYLPFEADIT LVQ G      ITIAVNN LT

Caenorhabditis elegans     (169)  TIPQGDFNYQSVAPRNISGRILSRLPAGAVKNVGNFDFFNYAGILRSVQL
Drosophila melanogaster    (195)  TVPQG---RITEVPNDGGMTIVQS---------YTFDFFNYAGIHRSVHL
Mus musculus               (179)  TLPPGTIVYKTDTSMYPKGYFVQD---------TSFDFFNYAGLHRSVVL
Rattus norvegicus          (179)  TLPPGTIVYKTDPSMYPKGYFVQD---------ISFDFFNYAGLHRSVVL
Felis catus                (179)  TLPPGTILYQTDTSKYPKGYFVQN---------INFDFFNYAGLHRPVLL
Canis familiaris           (179)  TLPPGTIVYKTDASKYPKGYFVQN---------TYFDFFNYAGLHRPVLL
Cercopithecus aethiops     (177)  TLPPGTIQYLTDISKYPKGYFIQN---------TYFDFFNYAGLQRSVLL
Homo sapiens               (180)  TLPPGTIQYLTDTSKYPKGYFVQN---------TYFDFFNYAGLQRSVLL
Sulfolobus solfataricus    (133)  NLPPAR-------------DLNN---------AAFDFFNYGGIHRPVYI
Thermotoga maritima        (124)  GFPSKVPDSGTHTVGFFGSFPPAN----------FDFFPYGGIIRPVLI
Lactobacillus gasseri      (144)  AIPCG-----TEEILDNGQKLAQP----------YFDFFNYSGIMRNVWL
Escherichia coli           (142)  TIPPG------MVITDENGKKKQS---------YFHDFFNYAGIHRSVML
Staphylococcus sp.         (140)  TLPVG---LYSERHEEGLGKVIRNK--------PNFDFFNYAGLHRPVKI
Aspergillus nidulans       (181)  TIPPGD-----LVTSEYTGKKQQS---------YQHDFYNYAGLARSIWL
Penicillium canescens      (179)  TIPPGK-----ITTGNATGKRIQT---------YQHDFYNYAGLARSIWL
Scopulariopsis sp.         (175)  TIPPG------EVVTNEAGKLRQD---------YNHDFYNYAGIARSVSL
Gibberella zeae            (143)  TIPPG------RIEAQSDGSRKQS---------YQHDFFNYAGLARSVWL
Consensus                  (201)  TLPPG      TD     G  VQ           FDFFNYAGL RSV L

                                                 Pfam00703 →
Caenorhabditis elegans     (169)  MKIP-SVYIQNINIVADHTGS----FFFETAVSSLDG---------VRVE
Drosophila melanogaster    (195)  YTTP-RTFIEEVEVTTNLSKDAT--VGEVFVSVSVNGSAANEADNVLQIQ
Mus musculus               (179)  YTTP-TTYIDDITVITNVEQDI----GLVTYWISVQG------SEHFQLE
Rattus norvegicus          (179)  YTTP-TTYIDDITVTTDVDRDV----GLVNYWISVQG------SDHFQLE
Felis catus                (179)  YTTP-TTYIDDITISTSVNQDT----GLVDYQIFVEG------GEHFQLE
Canis familiaris           (179)  YTTP-TTYIDDITVTTGVDQDT----GLVDYQIFVQG------SEHFQLE
Cercopithecus aethiops     (177)  YTTP-TAYIDDITVTTGVEHDT----GLVNYQISVKG------SNLFELE
Homo sapiens               (180)  YTTP-TTYIDDITVTTSVEQDS----GLVNYQISVKG------SNLFKLE
Sulfolobus solfataricus    (133)  EFVD-ECHVEDITVYTKSYGHLK-----VEILSECNQR--------FSLR
Thermotoga maritima        (124)  EFTD-HARILDIWVDTSESEPEK-KLGKVKVEIEVSEEAVG-----QEMT
Lactobacillus gasseri      (144)  LALP-QSQITNFKLNYQLANN----KATITYNIEANN--------NAEFK
Escherichia coli           (142)  YTTP-NTWVDDITVVTHVAQDCN--HASVDWQVVANGDVS----------
Staphylococcus sp.         (140)  YTTP-FTYVEDISVVTDFNGPT----GTVTYTVDFQG-------KAETVK
Aspergillus nidulans       (181)  YSVPKDQFIKDITVVPDVDWDGDAETGVVSYTVQTSNAT------SGPIR
Penicillium canescens      (179)  YSVP-QQHIQDITVVTDVDGD----NGLINYEVEVANQT------TGQIQ
Scopulariopsis sp.         (175)  YSVP-DVHVSDVTVTTENDDEGN--EGTVNYSVETSGSN------DTQAR
Gibberella zeae            (143)  YSVP-KVFINDISVGTDLLGDG---TGIVEFDIRTSGELQA----DARWR
Consensus                  (201)  YTTP  TYIDDITV T V  D     GLV Y I V G            L
```

Figure 7C

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Caenorhabditis elegans     (255) VKMFDGEGSLVYTGNQTK---SEGQISNPKLWWERG--MGKPDLYSLEVS
Drosophila melanogaster    (280) ANLYDKDGILVANATSDQKLGGKLQVNPVKPWWPYLMHSEPGYLYQLEIK
Mus musculus               (259) VQLLDEDGKVVAHGTGNQ---GQLQVESANLWWPYLMHEHPAYMYSLEVK
Rattus norvegicus          (259) VRLLDEDGKIVARGTGNE---GQLKVERAHLWWPYLMHEHPAYLYSLEVT
Felis catus                (259) VRLLDEEGKVVAQGTGGR---GQLQVPNAHLWWPYLMHEHPAYLYSLEVR
Canis familiaris           (259) VYLLDEEGKVVAQGTGSQ---GRLQVPNVHLWWPYLMHEHPAYLYSLEVR
Cercopithecus aethiops     (257) VRLLDAENKLVANGTGIQ---GQLKVEGARLWWPYLMHERPAYLYSLEVR
Homo sapiens               (260) VRLLDAENKVVANGTGTQ---GQLKVEGVSLWWPYLMHERPAYLYSLEVQ
Sulfolobus solfataricus    (196) FKLVDKEGRVILNEESSNE-VFEKDVNNVIPWSE-----DNPYLYTLIVE
Thermotoga maritima        (206) IKLGEEEKK---IRTSNRFVEGEFILENARFWSL---ED--PYLYPLKVE
Lactobacillus gasseri      (216) VTLFDNQKEVACATSKNT---SSLTIKNPHLWSPN-----DPYSYKIKIE
Escherichia coli           (214) VELRDADQQVVATGQGTS---GTLQVVNPHLWQP----G-EGYLYELCVT
Staphylococcus sp.         (217) VSVVDEEGKVVASTEGLS---GNVEIPNVILWEP-----LNTYLYQIKVE
Aspergillus nidulans       (261) ISILDEEGNEVATASGAT---GTATIPSVNLWQP----G-APYLYSFTVS
Penicillium canescens      (254) ISVIDEDGAIVAKASGAQ---GTVTIPSVKLWQP----G-AAYLYQLQVN
Scopulariopsis sp.         (251) VTLIDEDGNEVAEASELE---GSLNVSPVNLWQP----G-AAYLYTLRVE
Gibberella zeae            (220) ILLDDEEDATVCQAQESH---GKLEVKNAKYWAP----G-AAYLYQLRAQ
Consensus                  (301) V LLDEEGKVVA GTG      G L VPN  LW P       AYLYSL V

                                                     Pfam02836 →
Caenorhabditis elegans     (255) LILDG---ELADIMREQFGFRTVTWSDSQIFINSKPFYCLGFGMHEDFEI
Drosophila melanogaster    (280) LLATND--ELLDVYRLKVGIRTLSWNSQQFLINGKPVYFRGFGRHEDSDI
Mus musculus               (259) VTTTES---VTDYYTLPVGIRTVAVTKSKFLINGKPFYFQGVNKHEDSDI
Rattus norvegicus          (259) MTTPES---VSDFYTLPVGIRTVAVTKSKFLINGKPFYFQGVNKHEDSDI
Felis catus                (259) LTAQTAAGSVSDFYTLPVGIRTVAVTEHQFLINGKPFYFHGVNKHEDADI
Canis familiaris           (259) LTAQMAAGPVSDFYTLPVGIRTVAVTERQFLINGKPFYFHGVNKHEDADI
Cercopithecus aethiops     (257) LTAQTSLGPVSDFYTLPVGIRTVAVTESQFLINGKPFYFHGVNKHEDADI
Homo sapiens               (260) LTAQTSLGPVSDFYTLPVGIRTVAVTKSQFLINGKPFYFHGVNKHEDADI
Sulfolobus solfataricus    (196) MYVGGN---LKDSVYERIGFRDVEVKDGKIYLNGKPIFLKGFGRHEDFPI
Thermotoga maritima        (206) LEK--------DEVTLDIGIRTISWDEKRLYLNGKPVFLKGFGKHEEFPV
Lactobacillus gasseri      (216) MLEDG---KTVDEYTDKIGIRTVKIVNDKILLNNHPIMLKGFGKHEDFNV
Escherichia coli           (214) AKS----QTECDIYPLRVGIRSVAVKGEQFLINHKPFYFTGFGRHEDADL
Staphylococcus sp.         (217) LVNDG---LTIDVYEEPFGVRTVEVNDGKFLINNKPFYFKGFGKHEDTPI
Aspergillus nidulans       (261) ILSA-S-QRLIDTYTLEIGIRTVAVGNGTILVNNEPVMLTGFGKHEDSPI
Penicillium canescens      (254) IVGS-S-GDVVDTYNLATGVRTVKVAGSQFLINGKPFYFTGFGKHEDTAV
Scopulariopsis sp.         (251) LLS--D-DTVVDTYDLPVGVRSVRVEGNQFLINGKPFYFTGFGKHEDSPV
Gibberella zeae            (220) LVRGEH-DEILDTYNLAVGIRSVEIRDGRFFINGKPFYFTGFGKHEDGPV
Consensus                  (301) L          V D YTLPVGIRTVAV   QFLINGKPFYF GFGKHEDADI

                                                  Signature1
Caenorhabditis elegans     (347) IGRGFNQAIMTKDLNLLEWMGGNCYRTTHYPYSEERMFENDRRGIAVIVE
Drosophila melanogaster    (378) RGKGLDNALMVRDFNLLKWIGANAYRTSHYPYSEESMQFADEHGIMIIDE
Mus musculus               (353) RGKGFDWPLLVKDFNLLRWLGANSFRTSHYPYSEEVLQLCDRYGIVVIDE
Rattus norvegicus          (353) RGRGFDWPLLIKDFNLLRWLGANSFRTSHYPYSEEVLQLCDRYGIVVIDE
Felis catus                (356) RGKGFDWPLLVKDFNLLRWLGANAFRTSHYPYAEEVMQLCDRYGIVVIDE
Canis familiaris           (356) RGKGFDWPLLVKDFNLLRWLGANAFRTSHYPYAEEVMQLCDRYGIVVIDE
Cercopithecus aethiops     (354) RGKGFDWPLLVKDFNLLRWLGANAFRTSHYPYAEEVLQMCDRYGIVVIDE
Homo sapiens               (357) RGKGFDWPLLVKDFNLLRWLGANAFRTSHYPYAEEVMQMCDRYGIVVIDE
Sulfolobus solfataricus    (287) LGKFTYGAVLVRDEYLMRKIGANSFRTSHYPYSNEHLDLADEMGFLVILE
Thermotoga maritima        (290) LGQGTFYPLMIKDFNLLKWINANSFRTSHYPYSEEWLDLADRLGILVIDE
Lactobacillus gasseri      (305) LGKAVNESIIKRDYECMKWIGANCFRSSHYPYAEEWYQYADKYGFLIIDE
Escherichia coli           (302) RGKGFDNVLMVHDHALMDWIGANSYRTSHYPYAEEMLDWADEHGIVVIDE
Staphylococcus sp.         (306) NGRGFNEASNVMDFNILKWIGANSFRTAHYPYSEELMRLADREGLVVIDE
Aspergillus nidulans       (351) RGKGHDIAYLVHDFQLLDWIGANSFRTSHYPYAEEVMEFADRQGILVIDE
Penicillium canescens      (344) RGKGHDPAYMVHDFQLMKWIGANSFRTSHYPYAEEVMDFADRNGIVVIDE
Scopulariopsis sp.         (340) RGKGYDPAYMIHDFELMKWMGANSFRTSHYPYAEEVMEYADRHGIVVIDE
Gibberella zeae            (311) RGRGYDASYMIHDYRLMKWIGANSFRTSHYPYAEEVLEYADRHGVVVINE
Consensus                  (401) RGKGFD ALLVKDFNLLKWIGANSFRTSHYPYAEEVM LADRYGIVVIDE
```

Figure 7D

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Caenorhabditis elegans      (347) TPAVGLKGFSKANN-------------------NLHVKMLQDMIDRDKN
Drosophila melanogaster     (378) CP---SVDTENFSQ-----------------ELLGKHKSSLEQLIHRDRN
Mus musculus                (353) CPGVGIVLPQSFGN-----------------ESLRHHLEVMEELVRRDKN
Rattus norvegicus           (353) CPGVGIVLPQSFGN-----------------VSLRHHLEVMDELVRRDKN
Felis catus                 (356) SPGVGIVLVESYSN-----------------VSLQHHLEVMEELVRRDKN
Canis familiaris            (356) SPGVGIMLVQSYSN-----------------VSLQHHLEVMGELVRRDKN
Cercopithecus aethiops      (354) CPGVGLALPQFFNN-----------------VSLQNHMRVMEEVVRRDKN
Homo sapiens                (357) CPGVGLALPQFFNN-----------------VSLHHHMQVMEEVVRRDKN
Sulfolobus solfataricus     (287) PPLCYSNISRVMSQEE-------IAKMFGDVKYFEKVRDTIKEMIRQHKN
Thermotoga maritima         (290) APHVGITRYH-------------YN-----PETQKIAEDNIRRMIDRHKN
Lactobacillus gasseri       (305) VPAVGLNRSITNFLNVTNSNQSHFFASKTVPELKKVHEQEIKEMIDRDQR
Escherichia coli            (302) TAAVGFNLSLGIGFEAGNKPKELYSEEAVNGETQQAHLQAIKELIARDKN
Staphylococcus sp.          (306) TPAVGVHLNFMATTGLGEGSE--RVSTWEKIRTFEHHQDVLRELVSRDKN
Aspergillus nidulans        (351) TPAVGLAYSIGAGISTDTSRV-TFAPDGINNNTRAAHAQALRELIARDKN
Penicillium canescens       (344) TPAVGLNIAL-MGVSESGAPQ-TFTPDAINDKTQEAHKQAIRELIARDKN
Scopulariopsis sp.          (340) VAAVGLNLGISAGLRGDEPPK-TFTEDKVNNETQKTHAQALRELIHRDKN
Gibberella zeae             (311) TAAVGLNLNIVSGMFGNKQLA-TFSPDTMSSKTQASHEQAIRELISRDKN
Consensus                   (401)  PAVGL L     N                 T    H   IRELI RDKN

                                              *
                                  Signature2
Caenorhabditis elegans      (427) HPSVIAWSLANEPQTMKKESRNYFKTLVDTAHGIDR-TRPVTTVYGP-T-
Drosophila melanogaster     (458) HPSVVMWSIANEPRTGSVSADSYFELVANFTRSLDK-TRPITAAIAV---
Mus musculus                (436) HPAVVMWSVANEPSSALKPAAYYFKTLITHTKALDL-TRPVTFVSNA---
Rattus norvegicus           (436) HPAVVMWSVANEPVSSLKPAGYYFKTLIAHTKALDP-TRPVTFVSNT---
Felis catus                 (439) HPAVVMWSVANEPASFLKPAGYYFKTLIAHTKALDP-SRPVTFVTNS---
Canis familiaris            (439) HPSVVMWSVANEPTSFLKPAAYYFKTLIAHTKALDP-SRPVTFVTNS---
Cercopithecus aethiops      (437) HPAVVMWSVANEPASHLESAGYYLKMVITHTKALDP-SRPVTFVTNS---
Homo sapiens                (440) HPAVVMWSVANEPASHLESAGYYLKMVIAHTKSLDP-SRPVTFVSNS---
Sulfolobus solfataricus     (380) RPSVIMYSVMNEPPSDIREVAEFIRREVELFKSLDS-SRPVTFASHR---
Thermotoga maritima         (372) HPSVIMWSVANEPESNHPDAEGFFKALYETANEMDR-TRPVVMVSMMDAP
Lactobacillus gasseri       (405) HPSVIAWSLFNEPESTTQESYDYFKDIFAFARKLDPQNRPYTGTLVMGS-
Escherichia coli            (402) HPSVVMWSIANEPDTRPQGAREYFAPLAEATRKLDP-TRPITCVNVMFC-
Staphylococcus sp.          (404) HPSVVMWSIANEAATEEEGAYEYFKPLVELTKELDPQKRPVTIVLFVMA-
Aspergillus nidulans        (450) HPSVIMWSIANEPASDEPGARAYFEPLTRLARSLDPAHRPITFANLGLA-
Penicillium canescens       (442) HASVVMWSIANEPASHEDGAREYFEPLTNLTRQLDPTR-PITFANVGTA-
Scopulariopsis sp.          (439) HASVVSWCVTNEPASAEDGAREYFQPLVELTRELDP-TRPVTFTNVMGA-
Gibberella zeae             (410) HPCVVMWMLANEPGASEQGSREYFEPLVTLARSLDSQKRPMCYSHMIHS-
Consensus                   (501) HPSVVMWSVANEP S    A  YFK LI  TKALDP TRPVTFV

Caenorhabditis elegans      (427) -NFDNDQTADLMDFICVNRYYGWYIDMG-YIPWINQSVYWDISLWRETFH
Drosophila melanogaster     (458) -SNTQDKAGRSLDIISFNRYNAWYSNAG-RLDMITQNVIDEAIAWNKRYN
Mus musculus                (436) -KYDADLGAPYVDVICVNSYFSWYHDYG-HLEVIQPQLNSQFENWYKTHQ
Rattus norvegicus           (436) -RYDADMGAPYVDVICVNSYLSWYHDYG-HLEVIQLQLTSQFENWYKMYQ
Felis catus                 (439) -NYEADLGAPYVDVICVNSYYSWYHDYG-HMEVIQLQLATQFENWYRTYQ
Canis familiaris            (439) -NYEADLGAPYVDVICVNSYYSWYHDYG-HMEVIQLQLATEFENWYRTYQ
Cercopithecus aethiops      (437) -NYAADKGAPYVDVICLNSYYSWYHDYG-HLELIQRQLTTQFENWYKTYQ
Homo sapiens                (440) -NYAADKGAPYVDVICLNSYYSWYHDYG-HLELIQLQLATQFENWYKKYQ
Sulfolobus solfataricus     (380) --SVRDLALEYVDVISLNYYHGWYTEWG-DIDSGVKVVAIELEEIHKKFP
Thermotoga maritima         (372) DERTRDVALKYFDIVCVNRYYGWYIYQG-RIEEGLQALEKDIEELYARHR
Lactobacillus gasseri       (405) -GPKVDKLHPLCDFVCLNRYYGWYVAGGPEIVNAKKMLEDELDGWQNLKL
Escherichia coli            (402) -DAHTDTISDLFDVLCLNRYYGWYVQSG-DLETAEKVLEKELLAWQEKLH
Staphylococcus sp.          (404) -TPETDKVAELIDVIALNRYNGWYFDGG-DLEAAKVHLRQEFHAWNKRCP
Aspergillus nidulans        (450) -TYETDTISDLFDVLCLNRYFGWYSYTG-DLESAGKALHEELDGWVAKYP
Penicillium canescens       (442) -TYQLDRISDLFDVSCINRYFGWYSQTG-DLEEAEAALEKELHGWQEKFH
Scopulariopsis sp.          (439) -TVDKCLISDLFDFLSLNRYYGWYVQTG-DLESAEVAMEEELLQWVDEYD
Gibberella zeae             (410) -KPDTDRIADLFDVVCMNRYYGWYTQTG-NLKAAEVALEAELRSWQEAYA
Consensus                   (501)   YD D GA   VDVICLNRYYGWY D G  LE A    L  ELE W K Y
```

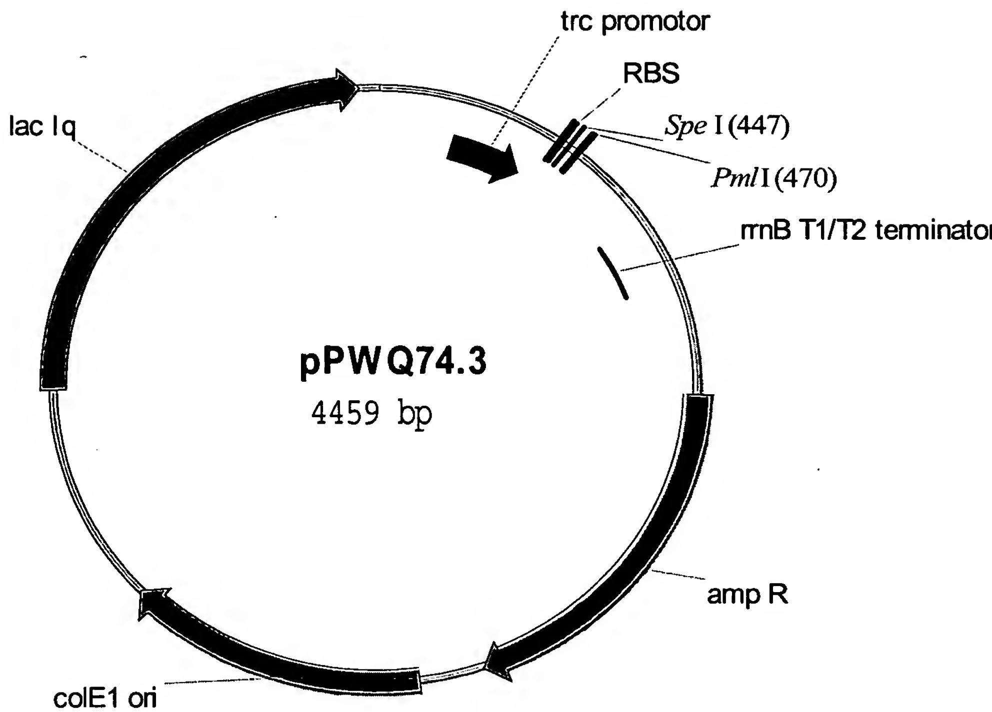
Figure 7E

Caenorhabditis elegans	(522)	-KPIIVTEYGADSIPGLNQEPSVDFSEQYQNEVIQETHHAFDALVKDHTI
Drosophila melanogaster	(552)	-KPIIMSEYGADTLEGLHMQPAYVWSEEFQTEVFSRHFKAFDELRKKGWF
Mus musculus	(530)	-KPIIQSEYGADAIPGIHEDPPRMFSEEYQKAVLENYHSVLDQKRKE-YV
Rattus norvegicus	(530)	-KPIIQSEYGADAVSGLHEDPPRMFSEEYQTALLENYHLILDEKRKE-YV
Felis catus	(533)	-KPIIQSEYGADTIAGFHQDPPLMFSEEYQKGLLEQYHLVLDQKRKE-YV
Canis familiaris	(533)	-KPIIQSEYGAETIAGFHQDPPLMFSEEYQKGLLEQYHLVLDQKRKE-YV
Cercopithecus aethiops	(531)	-KPIIQSEYGAETIVGFHQDPPLMFTEEYQKSLLEQYHVVLDQKRRK-YV
Homo sapiens	(534)	-KPIIQSEYGAETIAGFHQDPPLMFTEEYQKSLLEQYHLGLDQKRRK-YV
Sulfolobus solfataricus	(473)	EKPIIITEFGADAIYGLHSDPPQMWSEEYQSEMIRKYIEALREKDYI---
Thermotoga maritima	(470)	-KPIFVTEFGADAIAGIHYDPPQMFSEEYQAELVEKTIRLLLKKDYI---
Lactobacillus gasseri	(503)	NKPFVFTEFGADTLSSSHRLPDEMWSQEYQNEYYQMYFDIEKKYPFI---
Escherichia coli	(498)	-QPIIITEYGVDTLAGLHSMYTDMWSEEYQCAWLDMYHRVFDRVSAV---
Staphylococcus sp.	(501)	GKPIMITEYGADTVAGFHDIDEVMFTEEYQVEYYQANHVVFDEFENF---
Aspergillus nidulans	(547)	TKPIIISEYGADTMAGLHSVLGLIWSEEFQIELLDVYHGVFDQFQNV---
Penicillium canescens	(538)	-RPIVMTEYGADTLAGLHSILGLPWSEEFQVQMLDMYHRVFDRIESM---
***Scopulariopsis* sp.**	(535)	-KPIIMSEYGADTLAGLHAVDEVLWSEEYQTNLLRMSHKVFDSIDSI---
Gibberella zeae	(507)	AKPIIMTEYGTDTVAGLHTVCDVPWTEEYQVRFLDMYHRVFDRIDNV---
Consensus	**(601)**	**KPIIISEYGADTIAGLH DPPLMFSEEYQ LLE YH VFD**

Caenorhabditis elegans	(522)	TGEMIWNFADFMT-GMTTTRAVGNHKGVFTRSRQAKIAAYTLRNRYLKKG
Drosophila melanogaster	(552)	IGEFVWNFADFKT-AQSYTRVGGNKKGVFTRARQPKAAAHLLRKRYFALG
Mus musculus	(530)	VGELIWNFADFMT-NQSPLRVIGNKKGIFTRQRQPKTSAFILRERYWRIA
Rattus norvegicus	(530)	IGELIWNFADFMT-NQSPLRVTGNKKGIFTRQRNPKMAAFILRERYWRIA
Felis catus	(533)	VGELIWNFADFMT-NQSPQRVMGNKKGIFTRQRQPKGAAFLLRERYWKLA
Canis familiaris	(533)	VGELIWNFADFMT-DQSPQRAVGNRKGIFTRQRQPKAAAFLLRERYWKLA
Cercopithecus aethiops	(531)	VGELIWNFADFMT-EQSPTRVLGNKKGVFTRQRQPKSAAFLLRERYWKIA
Homo sapiens	(534)	VGELIWNFADFMT-EQSPTRVLGNKKGIFTRQRQPKSAAFLLRERYWKIA
Sulfolobus solfataricus	(473)	VGFHIWNFADFRT-PQNPSRTILNRKGIFTRDRQPKLAAKVVEELFKNKL
Thermotoga maritima	(470)	IGTHVWAFADFKT-PQNVRRPILNHKGVFTRDRQPKLVAHVLRRLWSEV-
Lactobacillus gasseri	(503)	CGELVWNFADFKT-SEGIMRVGGNDKGIFTRDREPKDIAFTLKKRWQQLN
Escherichia coli	(498)	VGEQVWNFADFAT-SQGILRVGGNKKGIFTRDRKPKSAAFLLQKRWTGMN
Staphylococcus sp.	(501)	VGEQAWNFADFAT-SQGVMRVQGNKKGVFTRDRKPKLAAHVFRERWTNIP
Aspergillus nidulans	(547)	VGEHVWNFADFQT-KEGIQRVDGNKKGVFTRDRRPKGAAFALRKRWMNMM
Penicillium canescens	(538)	AGEHVWNFADFQT-NLGIIRVDGNKKGVFTRDRKPKAAAHSLRARWTSID
***Scopulariopsis* sp.**	(535)	VGEHVWNFADFQTPHTGVNRVDGNKKGVFTRERRPKAAAHELKRRWLDEG
Gibberella zeae	(507)	VGEHVWNFADFQT-SAMIIRVDGNKKGIFTRDRRPKSAAHALRARWTGPV
Consensus	**(601)**	**VGE IWNFADF T Q RV GNKKGIFTRDRQPK AAFLLR RW IA**

Caenorhabditis elegans	(620)	SNIDTTIWT------------
Drosophila melanogaster	(650)	RDLDQCSFPEDLFTYIADLIS-
Mus musculus	(627)	NETGGHGSGPRTQCFGSRPFTF
Rattus norvegicus	(627)	NETRGYGSVPRTQCMGSRPFTF
Felis catus	(630)	NETRYPWSAVKSQCLENSPFTL
Canis familiaris	(630)	NETGHHRSAAKSQCLENSPFAL
Cercopithecus aethiops	(628)	NETRYPHSIAKSQCLENSPFT-
Homo sapiens	(631)	NETRYPHSVAKSQCLENSPFT-
Sulfolobus solfataricus	(569)	RS--------------------
Thermotoga maritima	(564)	----------------------
Lactobacillus gasseri	(599)	----------------------
Escherichia coli	(593)	FGEKPQQGGKQ-----------
Staphylococcus sp.	(597)	DFGYKN----------------
Aspergillus nidulans	(643)	SS--------------------
Penicillium canescens	(633)	KN--------------------
***Scopulariopsis* sp.**	(631)	FPKLGNGTSGA-----------
Gibberella zeae	(603)	GPRKIEVTKQ------------
Consensus	(701)	

Figure 8



trc promotor
RBS
Spe I (447)
Pml I (470)
rrnB T1/T2 terminator
lac Iq
pPWQ74.3
4459 bp
amp R
colE1 ori

Figure 9

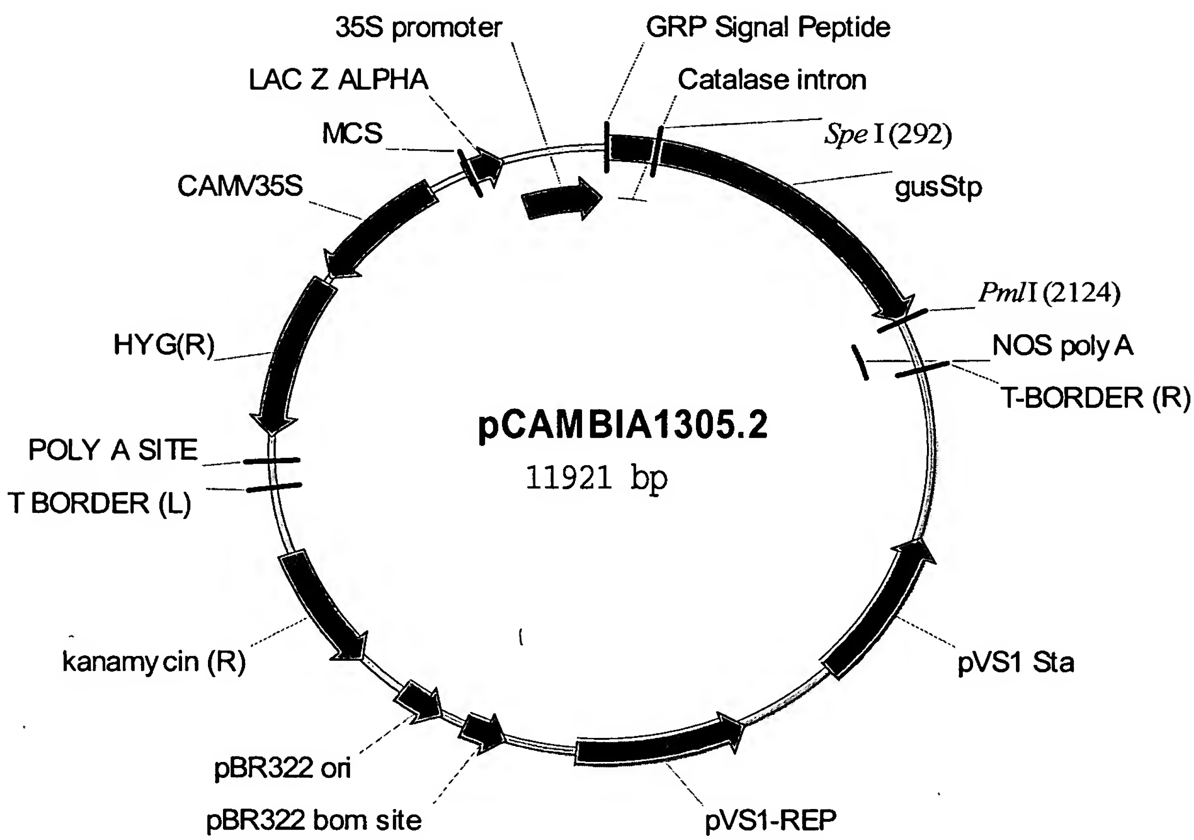

35S promoter
GRP Signal Peptide
LAC Z ALPHA
Catalase intron
MCS
Spe I (292)
CAMV35S
gusStp
*Pml*I (2124)
HYG(R)
NOS poly A
T-BORDER (R)
pCAMBIA1305.2
11921 bp
POLY A SITE
T BORDER (L)
kanamycin (R)
pVS1 Sta
pBR322 ori
pBR322 bom site
pVS1-REP

Figure 10A

β-Glucuronidase activity in leaves of rice T1 plants transformed with pPWT9.17

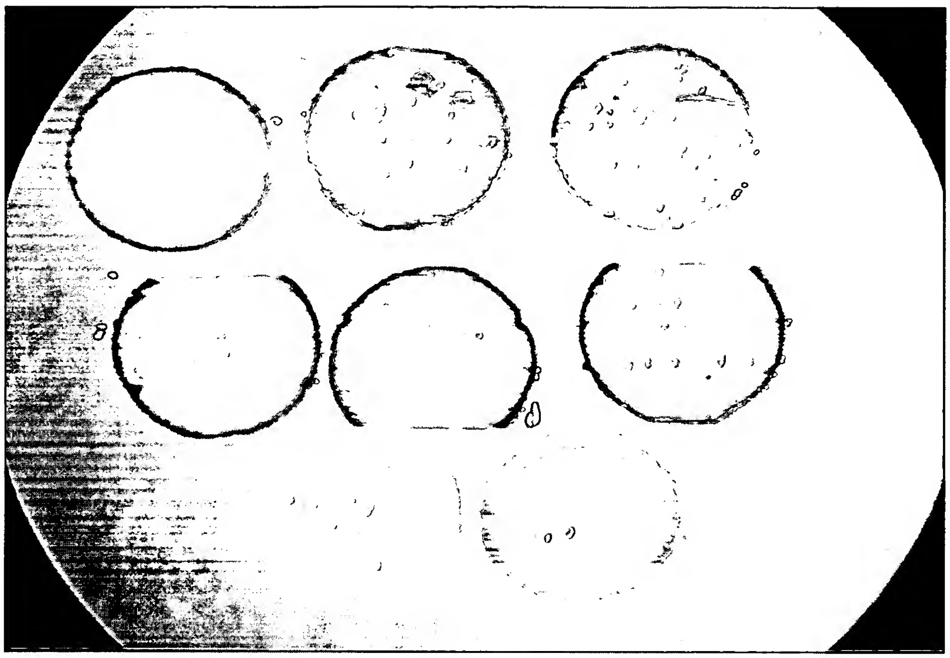


Figure 10B

Secreted β-glucuronidase activity in leaves of rice T1 plants transformed with pKKWA68.4 and pPWT9.17